



DESIGN OF AUTOMATIC DOMESTIC SERVICE WATER SUPPLY SYSTEM AND ITS IMPLEMENTATION

*Shubham Sharma¹ | Golu Yadav¹ | Jaydeep Prajapati¹ | Nitin Namdev² | Vishal Sharma²

¹ B.E. (C.S.E.) Jawaharlal Institute of Technology, Borawan, Khargone (M.P.).

² Asst. Professor (C.S.E.) Jawaharlal Institute of Technology, Borawan, Khargone (M.P.)

ABSTRACT

In the Present scenario, availability of drinking water is very huge problem in many states including Madhya Pradesh. Many people have been suffering a lot to bring water in time. The monitoring of water can prevent the occurrence of stealing and leaking of water effectively for the household. This paper portrays about the software based automatic water distribution system, which helps us to distribute the water automatically according to the needs of the particular locality. In traditional system there is no proper method followed for the distribution of water. In order to overcome the difficulty in the conventional system, the software based automated system using embedded controller is used for distributing the water to the people equally according to their utilization. The Embedded controller is already pre-programmed to do the operations by software and results are shown in our software.

KEYWORDS: relay, lcd, 328microcontroller, circuit.

1. INTRODUCTION

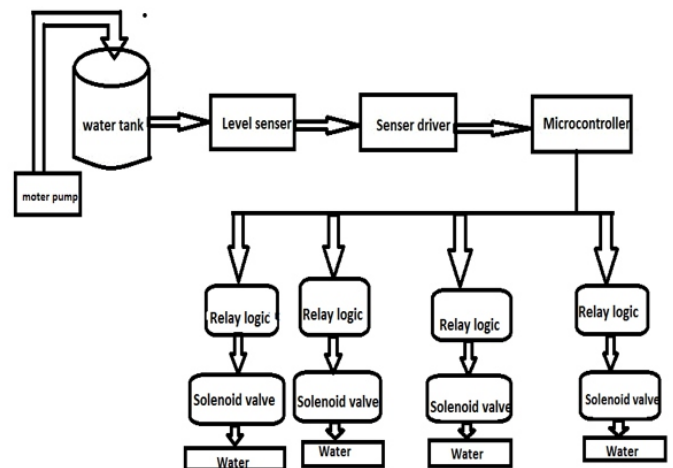
In urban infrastructure with the continuous economic growth, the water demand of enterprises is also increasing. The water wastage is due to many reasons such as leakages, mankind laziness, operator error etc. There is also problem of irregularity of water supply. The water supply can be control by using automatic water supply system to reduce wastage of water. The monitoring of water resource for these enterprises can prevent the occurrence of stealing water and leaking water effectively. Therefore, the monitoring system of urban water supply has aroused extensive attention in recent years. Urban water supply networks form the link between drinking Water supply and drinking water consumers. The water distribution supply systems are crucial part, therefore system must assure the continuity of the water supply distribution, the water quality control, monitoring and control of the technological process parameters, and water theft identification and deal with the restrictions imposed by the water availability, hydrological conditions, the storage capacity of the tanks and water towers and the increasing diversity of water use. The system includes pumping stations, micro controller based circuit, software, filtering utilities, storage tanks and towers, the piping distribution network and the central dispatching unit. The complete SCADA system structure includes one or more central PC main station that communicates with more Circuit implemented into the pumping stations or RTUs located in control panels throughout the network. The CIRCUIT's handle the direct control of the technological process whereas the central dispatching unit user interface- HMI, the treatment of data is implemented by the central PC station.

2. EXISTING SYSTEM

The water wastage is due to many reasons such as leakages, mankind laziness, operator error etc. There is also problem of irregularity of water supply i.e. he schedule of water supply is not fixed. Now-a-days, water storage and distribution system, monitoring temperature, pressure and for every stage for measuring and analyzing. We can't able to identify the theft in urban drinking water supply. Water flow control is impossible. The water supply systems are part of the urban infrastructure which must assure the continuity of the water distribution, the water quality control and the monitoring. In existing system, urban water is supplied to the home with the help of some man power. The person in charge will go to the place and then open the valve to that particular area. Once the time is over the person will go again to that place and close the valve. This type of operation needs man power. This is waste of time to go to that place and comeback often. Also the people may take excess water for their personal use with the help of motor or some other equipment. Due to this many people will not receive sufficient water for their use. Water is the basic needs of the humans. The theft can be prevented only when any public inform the officials about the theft. But the possibility of public is informing to higher officers are rare.

3. DESIGNED SYSTEM

The proposed automated water supply system consists of Circuit and software system, and level sensors, pumping system and electronics valve. Programmable logic controller is the heart of automated water Supply system. Circuit has been help in controlling pump station motor. Circuit programming is done using ladder diagram language. Ladder diagram is specialized schematic language commonly used to document industrial control logic systems. The real time data displayed on software.



3.1 Block Diagram of Automatic water Supply system

3.1 Power supply - this can be built into the Circuit or be an external unit. Common voltage levels required by the Circuit are 12vdc.

3.2 Input comes from sensors that translate physical phenomena into electrical signals. Examples as follows:

3.3 Proximity sensors - use inductance, capacitance or light to detect an object logically.

3.4 Switches - mechanical mechanisms will open or close electrical contacts for a logical signal.

3.5 Outputs to actuators allow a Circuit to cause something to happen in a process.

3.6 Electronic valves - logical outputs that can switch a hydraulic or pneumatic flow.

4. WORKING MODEL SPECIFICATION-

4.1 Implementation of automatic water supply system using 328 microcontrollers

Initial start for automatic water supply system for a city is designed using 328 microcontrollers. Hence supply of water has done separately to the different areas. It removes the manual requirement of man power. It is implemented for three different regions.

When the system become ON it ask for the time setting to turn OFF & ON the water supply for particular area. As the same instant the clock timer will start for the specified time period. When the specified time limit reach the system will

become OFF for particular area.

4.2 Automatic Water Supply System Using 328 Microcontrollers

The above proposed system is also implemented using 328 microcontrollers. Here the level sensor senses the level of water. With the use of DTMF the water is supplied automatically to the targeted areas. The visual display is provided as graphical LCD for showing the necessary information and details.

4.3 Relay Module

A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism mechanically, but other operating principles are also used. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

4.4 LCD Module

A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating, properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images, such as preset words, digits, and 7-segment displays as in a digital clock.

5. FUTURE ENHANCEMENT

They comprise a complex network of pipelines buried underground that are relatively inaccessible. Maintaining the integrity of these networks is vital for providing clean drinking water to the general public. There is a need for in-situ, on-line monitoring of water distribution system in order to facilitate efficient management and operation. In particular, it is important to detect a localized pipe failures soon after they occur, and pre-emptively identify 'hotspots', or areas of the distribution network that are more likely to be susceptible to structural failure. These capabilities are vital for reducing the time taken to identify and repair failures and hence, mitigating impacts on water supply. And in future we will try to overcome from these following written points:

5.1 Our system is circuit based and if circuit will stop working then our system will be in its halted state.

5.2 If due to any reason automation will fail then manual efforts will work.

6. ADVANTAGES

6.1 Automation eliminates the manual operation of opening or closing valve.

6.2 Possibility to change frequency of automatic water supply system processes and to optimize these processes.

6.3 Use of water from different source and increase efficiency in water.

6.4 Overhead tank remains full.

6.5 Using this system one can save money which government is giving to watermen.

7. APPLICATION AREA OF AUTOMATIC WATER SUPPLY SYSTEM

7.1 For household and industries.

7.2 For Large hotels, colleges and universities etc.

7.3 To supply the water into farm and also can be used for supplying chemical mixing with water in the tank.

8. CONCLUSION

The automated system implemented into the water distribution network insures the update of the refurbished water supply urban utilities it offers new ways of monitoring. Measurement data reliability by the global monitoring of the network in the central dispatching unit, Continuity of the water distribution and prevention of the water theft. In this project we can completely eradicate the water theft in the government pipelines. So that people could get equal share of water. This system is excellent and cost effective to prevent the drinking water from the theft. In future our government is planning to send liquid petroleum gas and other fuels through pipelines.

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